

REMARKS

Reconsideration of the above-identified application in view of the preceding amendments and following remarks is respectfully requested.

Claims 1-5, 7-14, and 21-40 were pending in this application. By this Amendment, Applicant has amended claims 2, 9, 12, 23, 27, 30, 34, 36 and 37, and added claims 41-47. Accordingly, claims 1-5, 7-14 and 21-47 are currently pending in this application. It is respectfully submitted that no new matter has been introduced by these amendments, as support therefor is found throughout the specification and drawings.

Applicant has amended the specification to correct grammatical informalities cited by the Examiner. Applicant respectfully submits that no new matter has been introduced by these amendments. In accordance with 37 C.F.R. § 1.121, the substitute specification is appended hereto in a version which indicates the amendments.

Applicant has amended claims 2, 9, 23, 27, 30, 36 and 37 to address the informalities cited by the Examiner. In accordance with the 37 C.F.R. § 1.121, the amended claims are appended hereto in a version which indicates the amendments. Applicant has amended claim 12 to incorporate all of the limitations of base claims 1 and 2.

Applicant has amended the Abstract to address typographical errors cited by the Examiner, and provided a clean copy on a separate sheet as required.

Applicant has added claims 41-47, which correspond to cancelled nonelected claims 6 and 15-20, in order to preserve the right to rejoin these nonelected claims in the event that one of generic claims 1 and 2 is held allowable.

Applicant appreciates the indication of allowable subject matter in claims 12-14. Accordingly, claim 12 has been amended to include all of the limitations of the base claim and any intervening claims. It is therefore respectfully submitted that claims 12-14 are now allowable.

Rejections under 35 U.S.C. § 112

Claims 2-5, 7-9, 12-14, 23-33 and 36-40 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In view of the foregoing amendments, it is respectfully submitted that the Examiner's grounds for rejection have been obviated.

Rejections under 35 U.S.C. § 102

Claims 34-37 were rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Pat. No. 820,969 to Grelck. The Examiner's grounds for rejection are hereinafter traversed, and reconsideration is respectfully requested.

Grelck teaches a wood cutting saw blade wherein "each of the teeth is provided on its front or cutting edge and below its point with a projection". (See Grelck at column 2, lines 39-41). In addition, Grelck teaches that only the very end of the point of the tooth should be set (Grelck, Column 1, lines 19-20) such that each projection is necessarily located below the band plane, not at least partially between the bend plane and tip, as recited in amended independent claim 34. (See Grelck, Figs. 1, 2 and 4.) Accordingly, saw dust which is created along the sides of the points that have been set is not captured by the projections. Instead, the sawdust flow downwardly past the sides of the projections and onto the kerf walls. Accordingly, Grelck does not disclose or suggest any means for reducing the effective dust gap, as recited in amended independent claim 34.

Rejections under 35 U.S.C. § 103

Claims 38-40 were rejected under 35 U.S.C. § 103(a) as obvious in view of Grellck. The Examiner asserts that the recited ratio values S1/B and the recited values of S1 and S2 would be the mere discovery of the optimum or workable ranges within the general conditions of the prior art and therefore obvious to one having ordinary skill in the art in view of Grellck. The Examiner's grounds for rejection are hereinafter traversed, and reconsideration is respectfully requested.

Grellck shows saw dust-removing projections which enable the teeth of the saw to have a very slight lateral set, but, as discussed above, Grellck does not disclose or suggest any means for reducing the effective dust gap. With no means disclosed or suggested, there could be no workable ranges in the "general conditions of the prior art" for minimizing the effective dust gap relative to the lateral tooth set, as suggested by the Examiner.

Claims 1-5, 7-11 and 21-33 were rejected under 35 U.S.C. § 103(a) as obvious over U.S. Reissue Pat. No. RE31,433 to Clark, in view of Grellck. The Examiner's grounds for rejection are hereinafter traversed, and reconsideration is respectfully requested.

Clark is not in any way directed to reducing the quantity of dust passing through the dust gap and accumulating on the saw blade, as recited in independent claims 1 and 27. To the contrary, Clark's teachings attempt to address the problem of balanced tooth loading. More specifically, Clark describes a band saw blade having a plurality of recurrent groups of teeth wherein the teeth in each set differ, *inter alia*, in the relative dimensions of the gullet depth and rake angle. The relatively shorter teeth are provided with a correspondingly sharper forward edge 22 "so that the smaller teeth are rendered more able to dig in and remove a larger chip more comparable in size to that removed by the larger teeth". (See Clark, column 3, lines 58-64.) Clark

asserts that this balances the impact on the individual teeth, evens wear, allows smoother operation than comparable blades with teeth of variable size, and thereby increases the overall cutting speed. (See Clark, column 2, lines 46-66.)

The sawdust removing projections of Grellck, however, must be located on the "front or cutting edge" of each tooth, and therefore if Grellck were combined with Clark in the manner suggested by the Examiner, Grellck's projections would disrupt the deliberate angle of the cutting or forward edge 22 taught by Clark and thereby defeat the express teaching of Clark. Moreover, the projections of Grellck would shorten the rake face of the teeth, causing each tooth to produce smaller chips. The resulting reduction of the chip load of the shorter teeth would be disproportionate with the reduction of the chip load of the larger teeth, thereby further defeating the express teachings of Clark. Accordingly, there would be no motivation to combine Grellck with Clark in the manner suggested by the Examiner for at least these reasons.

Additionally, with respect to the set teeth, Grellck specifically teaches that "only the very end of the point of the tooth need be set" in order to provide a narrower kerf and increase the cutting capacity of the saw and to provide cleaner and more convenient cuts. (See Grellck, Column 1, lines 20-27.) Clark, on the other hand, specifically teaches that the outer tips of all set teeth, including the "shorter" teeth (having a shallower gullet), should reach the same outward distance. As a result, Clark's shorter teeth must have a sharper angle of set to reach the same outward distance as the larger teeth. Accordingly, Clark's saw blade does not define a uniform bend plane, but rather the bend plane of each tooth is located at the base of the respective gullet 20, as described with reference to, and illustrated in FIG. 4. Accordingly, since Clark teaches forming the bend plane at the base of each gullet, and Grellck teaches forming each projection below the bend plane, there would be no motivation to apply the projections of Grellck to the band saw blade of Clark for this additional reason.

Moreover, even if it were somehow possible to combine Grelck with Clark in the manner suggested by the Examiner, which Applicant respectfully disputes, the resulting saw blade would not meet the terms of the presently claimed invention. As described above, Grelck's projections are necessarily located below the bend plane, and therefore the resulting saw blade would not include a shelf located at least partially between the tip and the bend plane, as recited in independent claim 1.

In sum, neither Clark nor Grelck recognize the problem of reducing the quantity of dust passing through the dust gap and accumulating on the saw blade, much less teach a solution to this problem, as recited in independent claims 1 and 27. Accordingly, it would not have been obvious to combine Clark and Grelck in the manner suggested by the Examiner for at least these reasons.

The Examiner asserts that the specific ratios and dimensions set forth in claims 3, 4, 7-11, 21-26 and 31-33 "would be the mere discovery of the optimum or workable ranges within the general conditions of the prior art and therefore obvious to one having ordinary skill in the art." Applicant respectfully asserts that, because it would be improper to combine the reference in the manner suggested, there would be no such workable range in the general conditions of the prior art in which the resulting saw could accomplish the function of the claimed invention.

Accordingly, it is respectfully submitted that independent claims 1 and 27 are unobvious over Clark in view of Grelck for at least these reasons. Because dependent claims 2-5, 7-11 and 21-23 each include all of the limitations of one of these independent claims, it is respectfully submitted that these dependent claims likewise are unobvious over the cited references for the same reasons as set forth above in connection with the independent claims, and for reciting additional patentable subject matter.

It is therefore respectfully submitted that claims 1-5, 7-14 and 21-47 are allowable. All issues raised by the Examiner having been addressed, and early action to that effect is earnestly solicited.

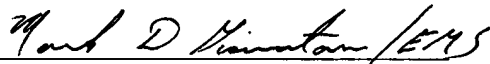
No additional fee is believed to be required in connection with this paper; however, if an additional fee is required, or otherwise if necessary to cover any deficiency in fees already paid, authorization is hereby given to charge our deposit account no. 50-1631.

In accordance with 37 C.F.R. § 1.121, the amended portions of the application are appended hereto in a version that indicates the amendments.

If the Examiner wishes to discuss any of the issues herein, or otherwise if it would facilitate the examination of this application, he is respectfully requested to call the undersigned at the telephone number below.

Respectfully submitted,

Date : November 20, 2002


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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Please amend the paragraph spanning Page 6, line 22, to Page 7, line 9 to read as follows:

It will be understood by one of ordinary skill in the pertinent art that the location and dimensions of the shelf 30, 30' affects the functionality of the shelf in removing dust. For simplicity, the following will use tooth 17' for an example in describing the location of the shelf 30'; however, it will be understood that this description may be equally applicable to all teeth disposed on the band saw blade 10. As shown in FIG. 2, the distance ~~S1~~ between the tip 20' and shelf tip 36' is defined as "S1," and the distance between the tip 20' and the bend plane 18 is defined as "B". Also, the distance between the tip 20' and the curvilinear base surface 26 is defined as "D". If S1 is set equal to or below B, then the shelf 30' will not be in a proper location to "catch" and remove the dust cut from the kerf wall 38. Specifically, a dust gap "DG" is defined between a lateral point 40' of the tooth 17' (which also establishes the kerf wall 38) and a side surface 42 at the base of the band saw blade 10. Effectively, the shelf 30' reduces the size of the dust gap or creates an effective dust gap "EDG" that is substantially less than DG.

Please amend the paragraph spanning page 8, line 23 to page 9, line 2 to read as follows:

In this embodiment, shelf surface 134 of the band saw blade 110 defines a generally planar configuration over substantially the entire shelf length, and a shelf surface angle A2 relative to the back edge ~~46~~ 116 of between approximately 4° and approximately 10°, and most preferably approximately 7°.

Please amend the paragraph spanning page 9, line 23 to page 10, line 12 to read as follows:

The band saw blade 210 is generally similar to the band saw blade 10 of FIGS. 1-3; however, each set tooth 217', 217'', etc. further includes a relief portion 244', 244'', respectively, formed on the upper corner of the tooth on the side facing the respective kerf wall 238. As illustrated in FIG. 5, the relief portions 244', 244'' each define a relief angle "RA" (shown in FIG. 5) which is preferably within the range of between approximately 0° and approximately 2° with respect to a plane defined by the unset tooth 220. The relief portions 244', 244'' function to locate the respective shelf 230 closer to the kerf wall 238 to thereby further reduce the dust gap DG to DG1 and, in turn, decrease the effective dust gap from EDG to EDG1. The relief portion may also define a tangential angle "TA" (shown in FIG. 6). In this way, the edge is relieved to reduce the effects of friction during cutting of a work piece (not shown). The angle TA is preferably within the range of between approximately 3° and approximately 6° with respect to a plane defined by the side of the blade body 210. It will be understood that the dimensions and interrelationship of S1 and B, as described above, applies to the current embodiment as well. ~~A~~The straight or unset tooth ~~220~~217 is also provided in this embodiment ~~which~~ also includes a shelf 230 similar to that described above.

IN THE ABSTRACT:

A wood cutting band saw blade that when cutting wood produces saw dust and forms a kerf. The band saw blade ~~includes a~~ includes a cutting edge defined by a plurality of teeth spaced relative to each other and a back edge located on an opposite side of the

band saw blade relative to the cutting edge. The plurality of teeth include a plurality of set teeth each having a tip, each defining a bend plane, and each including a shelf located at least partially between the tip and the bend plane for reducing saw dust passing to the kerf and accumulating on the band saw blade. Each of ~~theset~~ the set teeth may define a relief surface and a cutting surface, where the relief surface extends from one side of the tip in a ~~direction~~ direction opposite that of the movement of the band saw blade and the cutting surface extends from another side of the tip. The shelf includes a shelf surface extending from the cutting surface and may terminate in a shelf tip.

IN THE CLAIMS:

2. (Twice Amended) The band saw blade of claim 1 wherein:

each of the set teeth comprise a relief surface and a cutting surface, the relief surface extending from one side of the tip in a direction opposite that of ~~the~~ movement of the band saw blade and terminating at one end of an intermediate surface, and the cutting surface extending from another side of the tip; and

the shelf comprises a shelf surface extending from the cutting surface and terminating at another end of the intermediate surface.

9. (Once Amended) The band saw blade of claim 2 wherein a length (L1) of the shelf surface defined between the cutting surface and the intermediate surface is within the range of ~~from~~ between approximately .06 inch ~~and to~~ approximately .1 inch.

12. (Once Amended) A wood cutting band saw blade that when cutting wood produces saw dust and forms a kerf, comprising:

a cutting edge defined by a plurality of teeth spaced relative to each other, and a back edge located on an opposite side of the band saw blade relative to the cutting edge, the plurality of teeth comprising a plurality of set teeth, each set tooth defining a tip, a bend plane, and a shelf located at least partially between the tip and the bend plane for reducing saw dust passing to the kerf and accumulating on the band saw blade; wherein

each of the set of teeth comprise a relief surface and a cutting surface, the relief surface extending from one side of the tip in a direction opposite that of movement of the band saw blade and terminating at one end of an intermediate surface, and the cutting surface extending from another side of the tip;

the shelf comprises a shelf surface extending from the cutting surface and terminating at another end of the intermediate surface; and ~~The band saw blade of claim 2 wherein~~

the shelf surface comprises a first portion that is generally parallel to the back edge and a second portion that is disposed at an acute angle (A2) relative to the back edge.

23. (Twice Amended) The band saw blade of claim 3 wherein:

a plurality of set teeth each comprise a second shelf;

each second shelf comprises a second shelf surface, and each second shelf defines a dimension (S2) extending between the tip of the respective tooth and the second shelf.

27. (Once Amended) A wood cutting band saw blade having a lateral surface and generating dust during cutting of wood, the band saw blade comprising:

a base having a back edge;

a cutting edge defined by a plurality of teeth spaced relative to each other and being located on an opposite side of the band saw blade relative to the back edge, the plurality of teeth comprising a plurality of set teeth, each set tooth defining a tip, a bend plane, a dust gap extending approximately between an outer lateral point of the tip and a lateral surface of the base, and means located between the tip of each set tooth and the bend plane for reducing the quantity of dust passing through the dust gap and accumulating on the band saw blade.

30. (Twice Amended) The band saw blade of claim 28 wherein:

each of the set teeth comprise a relief surface and a cutting surface, the relief surface extending from one side of the tip in a direction opposite that of ~~the~~ movement of the band saw blade and terminating at one end of an intermediate surface, and the cutting surface extending from another side of the tip; and

the shelf comprises a shelf surface extending from the cutting surface and terminating at another end of the intermediate surface.

34. (Once Amended) A wood cutting band saw blade having a lateral surface and generating dust during cutting of wood, the band saw blade comprising:

a base having a back edge;

a cutting edge defined by a plurality of teeth spaced relative to each other and being located on an opposite side of the band saw blade relative to the back edge, the plurality of teeth comprising a plurality of set teeth, each set tooth defining a tip, a bend plane, a dust gap dimension extending approximately between an outer lateral point of the tip and a lateral surface of the base; and

means located at least partially between the tip and the bend plane for effectively reducing the dust gap dimension.

36. (Once Amended) The band saw blade of claim 35 wherein the means for effectively reducing the dust gap dimension further comprises a relief portion extending from the tip of the respective set tooth at an acute angle to a transverse axis of the saw blade.

37. (Twice Amended) The band saw blade of claim 35 wherein:

each of the set teeth comprise a relief surface and a cutting surface, the relief surface extending from one side of the tip in a direction opposite that of ~~the~~ movement of the band saw blade and terminating at one end of an intermediate surface, and the cutting surface extending from another side of the tip; and

the shelf comprises a shelf surface extending from the cutting surface and terminating at another end of the intermediate surface.

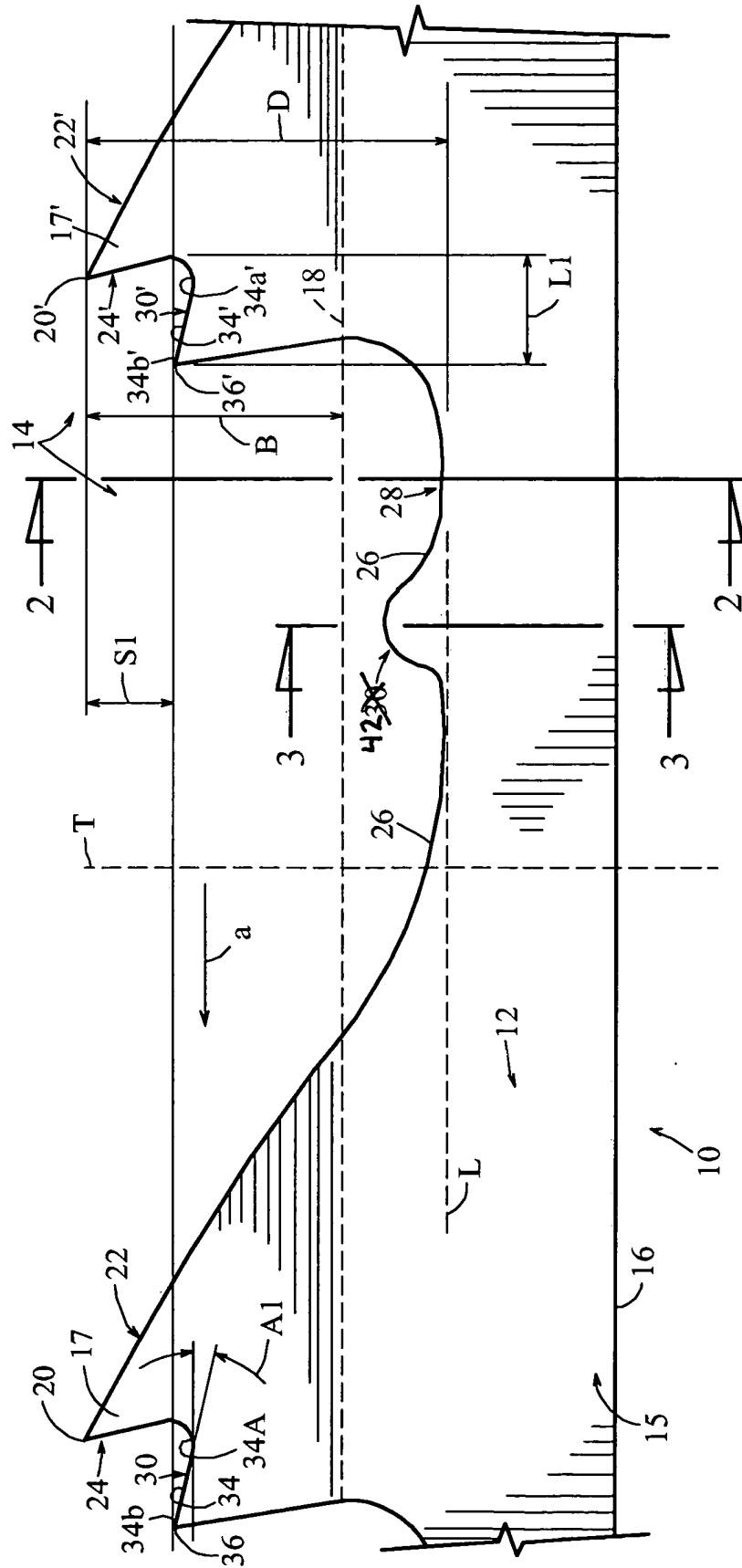
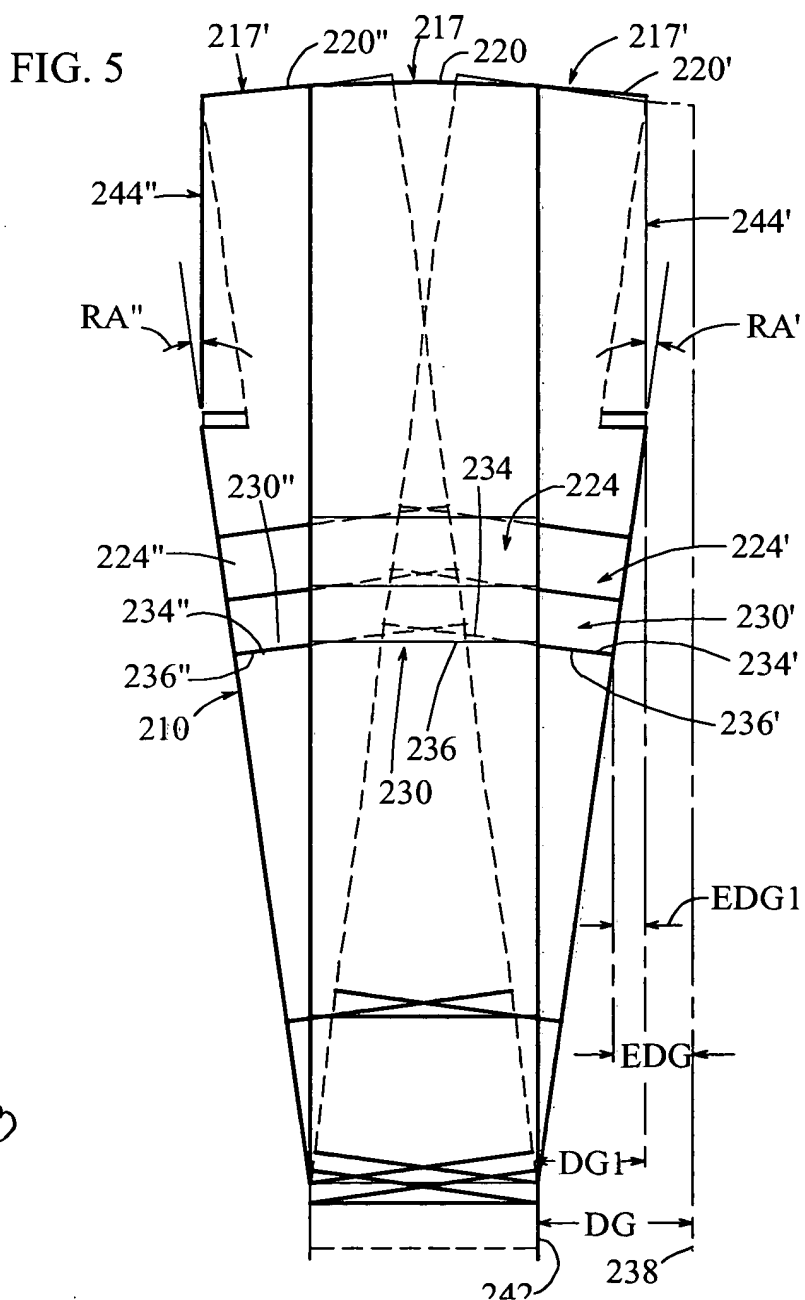
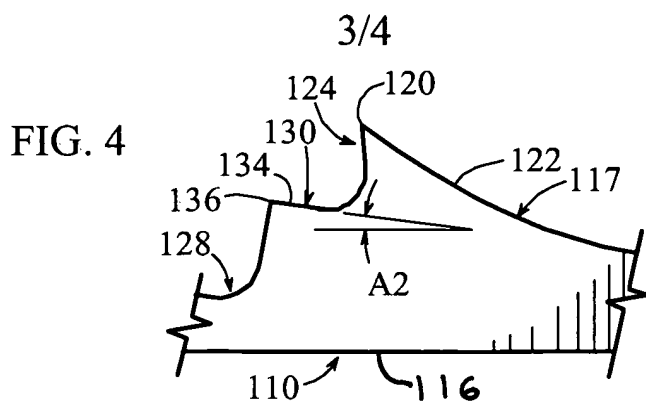


FIG. 1

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